WHAT IS CLAIMED

1. A high-frequency device for handling a plurality of transmitting/receiving systems having different passbands comprising (a) a branching circuit for branching higher-frequency signals and lower-frequency signals, (b) at least one switch circuit connected to said branching circuit for switching connection to transmitting systems and receiving systems, (c) a plurality of high-frequency amplifying circuits, and (d) a phase-adjusting circuit disposed between each of said switch circuits and each of said high-frequency amplifying circuits, wherein the phase matching between each of said switch circuits and each of said high-frequency amplifying circuits via said phase-adjusting circuit is adjusted to conjugate matching in a fundamental frequency band, while it is adjusted in a nonconjugate matching range in n-th frequency bands, wherein *n* is an integer of 2 or more.

2. The high-frequency device according to claim 1, wherein θ_2 is adjusted within $\theta_0 \pm 120°$ in said n-th frequency bands, wherein θ_0 is a phase opposite to a phase θ_1 by 180°, and θ_1 is conjugate to a phase θ of an impedance Z_1 of each of said high-frequency amplifiers when viewed from a connection reference plane between each of said switch circuits and each of said high-frequency amplifying circuits, and θ_2 is a phase of an impedance Z_2 of each of said switch circuits when viewed from said connection reference plane

3. A high-frequency module constituted by an integral laminate for handling a plurality of transmitting/receiving systems having different passbands, comprising (a) a switch module part for branching higher-frequency signals and lower-frequency signals and switching connection to said transmitting systems and said receiving systems, (b) a high-frequency

amplifying circuit module part, and (c) a phase-adjusting circuit disposed between said switch module part and said high-frequency amplifying circuit module part, wherein the phase matching between said switch module part and said high-frequency amplifying circuit module part via said phase-adjusting circuit is adjusted to conjugate matching in a fundamental frequency band, while it is adjusted in a nonconjugate matching range in n-th frequency bands, wherein n is an integer of 2 or more.

4. The high-frequency module according to claim 3, wherein θ_2 is adjusted within $\theta_0 \pm 120°$ in said n-th frequency bands, wherein θ_0 is a phase opposite to a phase θ_1 by 180°, and θ_1 is conjugate to a phase θ of an impedance Z_1 of said high-frequency amplifying circuit module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part, and θ_2 is a phase of an impedance Z_2 of said switch module part when viewed from said connection reference plane

5. The high-frequency module according to claim 3, wherein said phase-adjusting circuit is a low-pass filter constituted by an LC circuit, and wherein when a phase θ_3 of an impedance Z3 of said switch module part when viewed from a terminal of said phase-adjusting circuit on the side of said switch module part is present on the counterclockwise side of θ_0 on a Smith chart, a phase θ_2 of an impedance Z2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted by said phase-adjusting circuit, such that said phase θ_2 is closer to θ_0 than θ_3 in n-th frequency bands, said θ_0 being a phase opposite to a phase θ_1 by 180°, and said θ_1 being conjugate to a phase θ of impedance Z1 of said high-frequency amplifying circuit module part when viewed from said

connection reference plane

6. The high-frequency module according to claim 3, wherein said phase-adjusting circuit is constituted by a transmission line, and wherein when a phase θ_3 of an impedance Z3 of said switch module part when viewed from a terminal of said phase-adjusting circuit on the side of said switch module part is present on the counterclockwise side of θ_0 on a Smith chart, a phase θ_2 of an impedance Z2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted by making said transmission line longer, such that said phase θ_2 is closer to θ_0 than θ_3 in n-th frequency bands, said θ_0 being a phase opposite to a phase θ_1 by 180°, and said θ_1 being conjugate to a phase θ of impedance Z1 of said high-frequency amplifying circuit module part when viewed from said connection reference plane

7. The high-frequency module according to claim 3, wherein said phase-adjusting circuit is a high-pass filter constituted by an LC circuit, and wherein when a phase θ_3 of an impedance Z3 of said switch module part when viewed from a terminal of said phase-adjusting circuit on the side of said switch module part is present on the clockwise side of θ_0 on a Smith chart, a phase θ_2 of an impedance Z2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted by said phase-adjusting circuit, such that said phase θ_2 is closer to θ_0 than θ_3 in n-th frequency bands, said θ_0 being a phase opposite to a phase θ_1 by 180°, and said θ_1 being conjugate to a phase θ of impedance Z1 of said high-frequency amplifying circuit module part when viewed from said connection reference plane

8. The high-frequency module according to claim 3, wherein said

phase-adjusting circuit is constituted by a transmission line, and wherein when a phase θ_3 of an impedance Z3 of said switch module part when viewed from a terminal of said phase-adjusting circuit on the side of said switch module part is present on the clockwise side of θ_0 on a Smith chart, a phase θ_2 of an impedance Z2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted by making said transmission line shorter, such that said phase θ_2 is closer to θ_0 than θ_3 in n-th frequency bands, said θ_0 being a phase opposite to a phase θ_1 by 180°, and said θ_1 being conjugate to a phase θ of impedance Z1 of said high-frequency amplifying circuit module part when viewed from said connection reference plane

9. The high-frequency module according to claim 7, wherein an end of an inductor in an LC circuit constituting said high-pass filter is connected to said switch module part without interposing a capacitor, with its other end grounded.

10. A high-frequency device for handling a plurality of transmitting/receiving systems having different passbands comprising (a) a branching circuit for branching higher-frequency signals and lower-frequency signals, (b) at least one switch circuit connected to said branching circuit for switching connection to transmitting systems and receiving systems, (c) a plurality of high-frequency amplifying circuits, and (d) a phase-adjusting circuit disposed between each of said switch circuits and each of said high-frequency amplifying circuits, wherein a phase θ_2 of an impedance Z_2 of each of said switch circuits when viewed from a connection reference plane between each of said switch circuits and each of said high-frequency amplifying circuits is adjusted to a range of -125° to +90° in a fundamental frequency band.

11. A high-frequency device for handling a plurality of transmitting/receiving systems having different passbands comprising (a) a branching circuit for branching higher-frequency signals and lower-frequency signals, (b) at least one switch circuit connected to said branching circuit for switching connection to transmitting systems and receiving systems, (c) a plurality of high-frequency amplifying circuits, and (d) a phase-adjusting circuit disposed between each of said switch circuits and each of said high-frequency amplifying circuits, wherein a phase θ_2 of an impedance Z_2 of each of said switch circuits when viewed from a connection reference plane between each of said switch circuits and each of said high-frequency amplifying circuits is adjusted in a conjugate matching range within $\theta_1 \pm 90°$ in a fundamental frequency band, said θ_1 being conjugate to a phase θ of an impedance Z_1 of each of said high-frequency amplifiers when viewed from said connection reference plane

12. A high-frequency device for handling a plurality of transmitting/receiving systems having different passbands comprising (a) a branching circuit for branching higher-frequency signals and lower-frequency signals, (b) at least one switch circuit connected to said branching circuit for switching connection to transmitting systems and receiving systems, (c) a plurality of high-frequency amplifying circuits, and (d) a phase-adjusting circuit disposed between each of said switch circuits and each of said high-frequency amplifying circuits, wherein a phase θ_2 of an impedance Z_2 of each of said switch circuits when viewed from a connection reference plane between each of said switch circuits and each of said high-frequency amplifying circuits is adjusted in a conjugate matching range within $\theta_1 \pm 90°$ and in a range of $-125°$ to $+90°$ in a fundamental frequency band, said θ_1 being conjugate to a phase θ of an impedance Z_1 of each of said high-frequency amplifiers when viewed from said connection

reference plane

13. A high-frequency module constituted by an integral laminate for handling a plurality of transmitting/receiving systems having different passbands, comprising (a) a switch module part for branching higher-frequency signals and lower-frequency signals and switching connection to said transmitting systems and said receiving systems, (b) a high-frequency amplifying circuit module part, and (c) a phase-adjusting circuit disposed between said switch module part and said high-frequency amplifying circuit module part, wherein a phase θ_2 of an impedance Z2 of said switch module part when viewed from a connection reference plane between said high-frequency amplifying circuit module part and said switch module part is adjusted to a range of -125° to +90° in a fundamental frequency band by said phase-adjusting circuit.

14. A high-frequency module constituted by an integral laminate for handling a plurality of transmitting/receiving systems having different passbands, comprising (a) a switch module part for branching higher-frequency signals and lower-frequency signals and switching connection to said transmitting systems and said receiving systems, (b) a high-frequency amplifying circuit module part, and (c) a phase-adjusting circuit disposed between said switch module part and said high-frequency amplifying circuit module part, wherein a phase θ_2 of an impedance Z_2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted in a conjugate matching range within $\theta_1 \pm 90°$ in a fundamental frequency band by said phase-adjusting circuit, said θ_1 being conjugate to a phase θ of an impedance Z_1 of said high-frequency amplifying circuit module part when viewed from said connection reference plane

15. A high-frequency module constituted by an integral laminate for

handling a plurality of transmitting/receiving systems having different passbands, comprising (a) a switch module part for branching higher-frequency signals and lower-frequency signals and switching connection to said transmitting systems and said receiving systems, (b) a high-frequency amplifying circuit module part, and (c) a phase-adjusting circuit disposed between said switch module part and said high-frequency amplifying circuit module part, wherein a phase θ_2 of an impedance Z_2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted in a conjugate matching range within $\theta_1 \pm 90°$ and in a range of -125° to +90° in a fundamental frequency band by said phase-adjusting circuit, said θ_1 being conjugate to a phase θ of an impedance Z_1 of said high-frequency amplifying circuit module part when viewed from said connection reference plane

16. A high-frequency device for handling a plurality of transmitting/receiving systems having different passbands comprising (a) a branching circuit for branching higher-frequency signals and lower-frequency signals, (b) at least one switch circuit connected to said branching circuit for switching connection to transmitting systems and receiving systems, (c) a plurality of high-frequency amplifying circuits, and (d) a phase-adjusting circuit disposed between each of said switch circuits and each of said high-frequency amplifying circuits, wherein a phase θ_2 of an impedance Z_2 of each of said switch circuits when viewed from a connection reference plane between each of said switch circuits and each of said high-frequency amplifying circuits is adjusted by said phase-adjusting circuit, (1) in a conjugate matching range within $\theta_1 \pm 90°$ and in a range of -125° to +90° in a fundamental frequency band, and (2) in a nonconjugate matching range within ± 120° ($\theta_0 \pm 120°$) from a phase θ_0 opposite to a

phase θ_1 by 180° in n-th frequency bands, wherein n is an integer of 2 or more, said θ_1 being conjugate to a phase θ of an impedance Z_1 of each of said high-frequency amplifiers when viewed from said connection reference plane

17. A high-frequency module constituted by an integral laminate for handling a plurality of transmitting/receiving systems having different passbands, comprising (a) a switch module part for branching higher-frequency signals and lower-frequency signals and switching connection to said transmitting systems and said receiving systems, (b) a high-frequency amplifying circuit module part, and (c) a phase-adjusting circuit disposed between said switch module part and said high-frequency amplifying circuit module part, wherein a phase θ_2 of impedance Z_2 of said switch module part when viewed from a connection reference plane between said switch module part and said high-frequency amplifying circuit module part is adjusted by said phase-adjusting circuit, (1) in a conjugate matching range within $\theta_1 \pm 90°$ and in a range of -125° to +90° in a fundamental frequency band, and (2) in a nonconjugate matching range within ± 120° ($\theta_0 \pm 120°$) from a phase θ_0 opposite to a phase θ_1 by 180° in n-th frequency bands, wherein n is an integer of 2 or more, said θ_1 being conjugate to a phase θ of an impedance Z_1 of said high-frequency amplifying circuit module part when viewed from said connection reference plane

18. The high-frequency module according to claim 3, wherein a region containing said high-frequency amplifying circuit module part and a region containing said switch module part are shielded from each other by a shielding electrode formed on at least one of dielectric layers constituting said laminate, or by through-hole electrodes penetrating a plurality of dielectric layers constituting said laminate.

19. The high-frequency module according to claim 18, wherein said

shielding electrode is formed on a layer above or below a dielectric layer provided with transmission lines.

20. The high-frequency module according to claim 18, wherein said through-hole electrodes are connected to said shielding electrode.

21. The high-frequency module according to claim 20, wherein said through-hole electrodes are connected to ground electrodes formed on other dielectric layers.

22. The high-frequency module according to claim 3, wherein said switch module part comprises a branching circuit for branching higher-frequency signals and lower-frequency signals, and switch circuits connected to said branching circuit for switching connection to transmitting systems and receiving systems.

23. The high-frequency module according to claim 3, wherein said high-frequency amplifying circuit module part comprises at least a semiconductor element, a power-applying circuit and a matching circuit.

24. The high-frequency module according to claim 3, wherein at least part of transmission lines and LC circuits constituting said switch module part, said high-frequency amplifying circuit module part and said phase-adjusting circuit are formed by electrode patterns formed on dielectric layers constituting said laminate, and chip elements constituting part of switching elements, semiconductor elements and LC circuits constituting said switch module part and said high-frequency amplifying circuit module part are mounted onto said laminate.

25. The high-frequency module according to claim 24, wherein said branching circuit is constituted by an LC circuit; wherein main elements of said switch circuit are switching elements and transmission lines; wherein at least part of said LC circuits and said transmission lines are formed by electrode patterns formed on dielectric layers constituting said laminate;

and wherein chip elements constituting part of said switching elements and said LC circuits are mounted onto said laminate.

26. The high-frequency module according to claim 24, wherein said high-frequency amplifying circuit module part comprises at least a semiconductor element, a power-applying circuit and a matching circuit; wherein at least part of transmission lines and LC circuits constituting said power-applying circuit and said matching circuit are formed by electrode patterns formed on dielectric layers constituting said laminate; and wherein chip elements constituting part of said switching elements and said LC circuits are mounted onto said laminate.

27. The high-frequency module according to claim 24, wherein at least part of transmission lines or LC circuits constituting said phase-adjusting circuit are formed by electrode patterns formed on dielectric layers constituting said laminate.

28. The high-frequency module according to claim 22, wherein each transmitting system in said switch circuit comprises a low-pass filter constituted by an LC circuit, and wherein said LC circuit is formed by electrode patterns on dielectric layers constituting said laminate.

29. The high-frequency module according to claim 3, wherein it comprises at least one of a coupler circuit, an isolator circuit and a filter circuit between said high-frequency amplifying circuit module part and said switch module part.

30. A high-frequency device comprising high-frequency amplifying circuits, and high-frequency circuits disposed downstream of said high-frequency amplifying circuits for treating a high-frequency signal amplified by said high-frequency amplifying circuit, which are connected to each other via a phase-adjusting circuit, wherein a phase θ_2 of an impedance Z2 of each of said downstream high-frequency circuits when viewed from a

reference point of said phase-adjusting circuit on the side of said high-frequency amplifying circuit is adjusted within $\theta_0 \pm 120°$ in a frequency that is *n* times (*n* is an integer of 2 or more) the fundamental frequency of said high-frequency signal, said θ_0 being an opposite phase to a phase θ_1, which is conjugate to a phase θ of an impedance Z1 of said high-frequency amplifying circuit when viewed from said reference point.

31. The high-frequency device according to claim 1, wherein said high-frequency amplifying circuit comprises at least a semiconductor element, a power-applying circuit and a matching circuit.

32. A communications device for transmitting and receiving two or more signals having different frequencies via one common antenna, said common antenna being connected to a high-frequency device comprising (a) a branching circuit for branching higher-frequency signals and lower-frequency signals, (b) at least one switch circuit connected to said branching circuit for switching connection to transmitting systems and receiving systems, (c) a plurality of high-frequency amplifying circuits, and (d) a phase-adjusting circuit disposed between each of said switch circuits and each of said high-frequency amplifying circuits, wherein the phase matching between each of said switch circuits and each of said high-frequency amplifying circuits via said phase-adjusting circuit is adjusted to conjugate matching in a fundamental frequency band, while it is adjusted in a nonconjugate matching range in n-th frequency bands, wherein *n* is an integer of 2 or more.

33. A communications device for transmitting and receiving two or more signals having different frequencies via one common antenna, said common antenna being connected to a high-frequency module constituted by an integral laminate, said high-frequency module comprising (a) a switch module part for branching higher-frequency signals and lower-

frequency signals and switching connection to said transmitting systems and said receiving systems, (b) a high-frequency amplifying circuit module part, and (c) a phase-adjusting circuit disposed between said switch module part and said high-frequency amplifying circuit module part, wherein the phase matching between said switch module part and said high-frequency amplifying circuit module part via said phase-adjusting circuit is adjusted to conjugate matching in a fundamental frequency band, while it is adjusted in a nonconjugate matching range in n-th frequency bands, wherein *n* is an integer of 2 or more.